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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,918	02/10/2004	Arif Kazi	71286	1402

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EXAMINER
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WANG, JIN CHENG

ART UNIT	PAPER NUMBER
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2672

DATE MAILED: 07/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/775,918	<b>Applicant(s)</b> KAZI ET AL.	
	<b>Examiner</b> Jin-Cheng Wang	<b>Art Unit</b> 2672	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

## DETAILED ACTION

### *Information Disclosure Statement*

The information disclosure statement (IDS) submitted on 2/10/2004 has been considered by the examiner.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-15, 17, 19-37, 39, 41-44 are rejected under 35 U.S.C. 102(e) as being anticipated by Watanabe et al. U.S. Patent No. 6,763,284 (hereinafter Watanabe).

Re Claims 1 and 23:

Watanabe discloses method for fading computer-generated information into an image of the real environment detected by an image receiving unit located on a viewing device,

Wherein there is a determination of a position and an orientation or pose of the image receiving unit (*e.g., the 2-dimensional image pickup device 2 or 12 in Fig. 1 are mounted on the robot and the reference work 7 in the field of view is captured using the camera 12 and the image is display on the image display device 3. A position to be measured by the first robot 5 is pointed on an image using a pointing device 4 and coordinates of the position pointed on the image are stored in the robot controller and thereby obtaining/determining the coordinates of*

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*the position. A view line **corresponding** to the position is obtained on the 3-dimensional image and the position and the orientation of the camera 12; column 11-12. Moreover, the 3-dimensional positions of a sequence of the points which constitute the working line thus obtained are utilized as teaching points of the robot and thus constitute the robot specific information as teaching points of the robot to produce the movement path or a motion program of the robot 5, see column 7, lines 20-35. It is also disclosed that the orientations of faces in the vicinity of the working line are measured in correspondence to the respective points: The measurement start point is selected on a working line on which an actual working is performed. The robot having the image pickup device 2 or 12 constitutes an image receiving unit) and that robot-specific information (e.g., the working line or the working path of the robot is the robot-specific information; column 8, lines 50-60) corresponding to this determination is faded over the image of the real environment on the viewing device (e.g., the image of the camera 2 or 12 is displayed on a screen of the image display device 3 and **the detected point positions constituting the working line are displayed while being superimposed on this image**; column 5, lines 10-17 and column 12, lines 45-67).*

Claims 2 and 24:

Watanabe further discloses a plurality of coordinate systems including the world coordinate system and the coordinates of the positions of the working path are detected and superimposed on the image of the reference work (e.g., column 12, lines 10-21).

Claims 3 and 25:

Watanabe further discloses a plurality of coordinates being faded/superimposed on the reference image and the coordinates are given as coordinates to a tool coordinate system fixed on the distal end portion of the hand of the robot (column 2, lines 40-49).

Claims 4 and 25:

Watanabe further discloses the coordinate positions of the working path being faded/superimposed on the reference image or the working object relative to the axes of the three-dimensional or two-dimensional space (column 2, lines 28-49).

Claims 5 and 27:

Watanabe further discloses an image of a control element (working path) of a robot manual programmer (operator) movable in at least two dimensions (either two-dimensional space or three-dimensional space) in faded in /superimposed over the image of the working object (*column 5, lines 10-17 and column 12, lines 45-67*).

Claims 6 and 28:

Watanabe further discloses an image of a control element such as a working path of a robot and the orientation of the robot hand are utilized (column 4 and column 7, lines 20-40).

Claims 7 and 29:

Watanabe further discloses at least one tool moved by a robot (Figs. 3-5), preferably several robot elements are faded into a working environment of a robot (Figs. 3-5).

Re Claims 8 and 30:

Watanabe further discloses teaching an attitude of a tool center point to the robot and a working path in relation to the reference work (column 7-8) and the thinning process of redundant detected points (column 7-8).

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Re Claims 9 and 31:

Watanabe further discloses an image of a control element (working path) of a robot manual programmer (operator) movable in at least two dimensions (either two-dimensional space or three-dimensional space) in faded in /superimposed over the image of the working object (*column 5, lines 10-17 and column 12, lines 45-67*).

Claims 10 and 32:

Watanabe further discloses the coordinate positions of the working path being faded/superimposed on the reference image or the working object relative to the axes of the three-dimensional or two-dimensional space (*column 2, lines 28-49*).

Claims 11 and 33:

Watanabe further discloses adapting a robot working path to the position of a detected, real work-piece or the working object, a virtual image of the working object with a robot path adapted thereto is faded in, so that by superimposing the virtual work object image with the image of the real object it is possible to adapt the robot path to be performed to the position of the real working object (*column 7-8 and column 12*).

Claims 12 and 34:

Watanabe further discloses the working area reachable by a robot and/or a permitted operating area is visualized on the viewing device (*column 12*).

Claims 13 and 35:

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Watanabe further discloses movement corridors of a robot tool, robot hand and/or further robot elements are visualized on the viewing device (column 5, lines 10-30 and column 12, lines 45-67).

Claims 14 and 36:

Watanabe further discloses permanent and/or instantaneous associations of at least one manual programmer of at least one robot are visualized (column 12, lines 45-67).

Claims 15 and 37:

Watanabe further discloses the position and orientation of the display are detected by fixed markings in space (column 12, lines 45-67).

Claims 17 and 38:

Watanabe further discloses the position and orientation of the viewing device are determined optically (column 12, lines 45-67).

Claims 19 and 39:

Watanabe further discloses the robot-specific information (*e.g., the working line or the working path of the robot is the robot-specific information; column 8, lines 50-60*) corresponding to this determination is faded over the image of the real environment on the viewing device (*e.g., the image of the camera 2 or 12 is displayed on a screen of the image display device 3 and **the detected point positions constituting the working line are displayed while being superimposed on this image**; column 5, lines 10-17 and column 12, lines 45-67 and column 13, lines 1-46*).

Claims 20-22 and 40-44:

Watanabe further discloses the robot-specific information (*e.g., the working line or the working path of the robot is the robot-specific information; column 8, lines 50-60*) corresponding

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to this determination is faded over the image of the real environment on the viewing device (e.g., *the image of the camera 2 or 12 is displayed on a screen of the image display device 3 and the detected point positions constituting the working line are displayed while being superimposed on this image*; column 5, lines 10-17 and column 12, lines 45-67 and column 13, lines 1-46).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 16 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al. U.S. Patent No. 6,763,284 (hereinafter Watanabe).

Claims 16 and 38:

The claims further recite markings are detected by radio receivers. Watanabe is silent to the claim limitation.

It would have been obvious to have incorporated radio receivers to collect the working path information or to serve as an image pickup device because Watanabe discloses a general image pickup device such as a camera or an optical receiver for collecting the path information (Watanabe Figs. 1-5) and thereby suggesting the claim limitation of an image pickup device such as the radio receivers. Moreover, the radio receiver can be used in replace with the optical receiver as an alternative image and information collection device.



One of the ordinary skill in the art would have been motivated to use an alternative receiver to collect the robot working path information and to pick up the image information when necessary (column 9-10).

Claims 18 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al. U.S. Patent No. 6,763,284 (hereinafter Watanabe) in view of Mizuno et al. U.S. Patent No. 5,876,325 (hereinafter Mizuno).

Claims 18 and 40:

The claims further recite data spectacles to be worn by a user for displaying the robot information. Watanabe is silent to the claim limitation.

However, Mizuno discloses HMD for displaying the robot information (Mizuno Fig. 28 and 35).

It would have been obvious to have incorporated HMD to display the robot information because Watanabe discloses a display device connected to the robot for collecting the robot specific information (Watanabe Figs. 1-5) and Mizuno discloses HMD coupled to the robot manipulators for collecting the robot specific information (Mizuno Figs. 28 and 35) and therefore an alternative display device can be used to collect the robot specific information.

One of the ordinary skill in the art would have been motivated to use an alternative display device such as an HMD so that an operator armed with HMD can directly see the work performed while specifying the points along the working path (Watanabe column 12, lines 45-67).

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jin-Cheng Wang whose telephone number is (571) 272-7665. The examiner can normally be reached on 8:00 - 6:30 (Mon-Thu).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Razavi can be reached on (571) 272-7664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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